Advanced Testing

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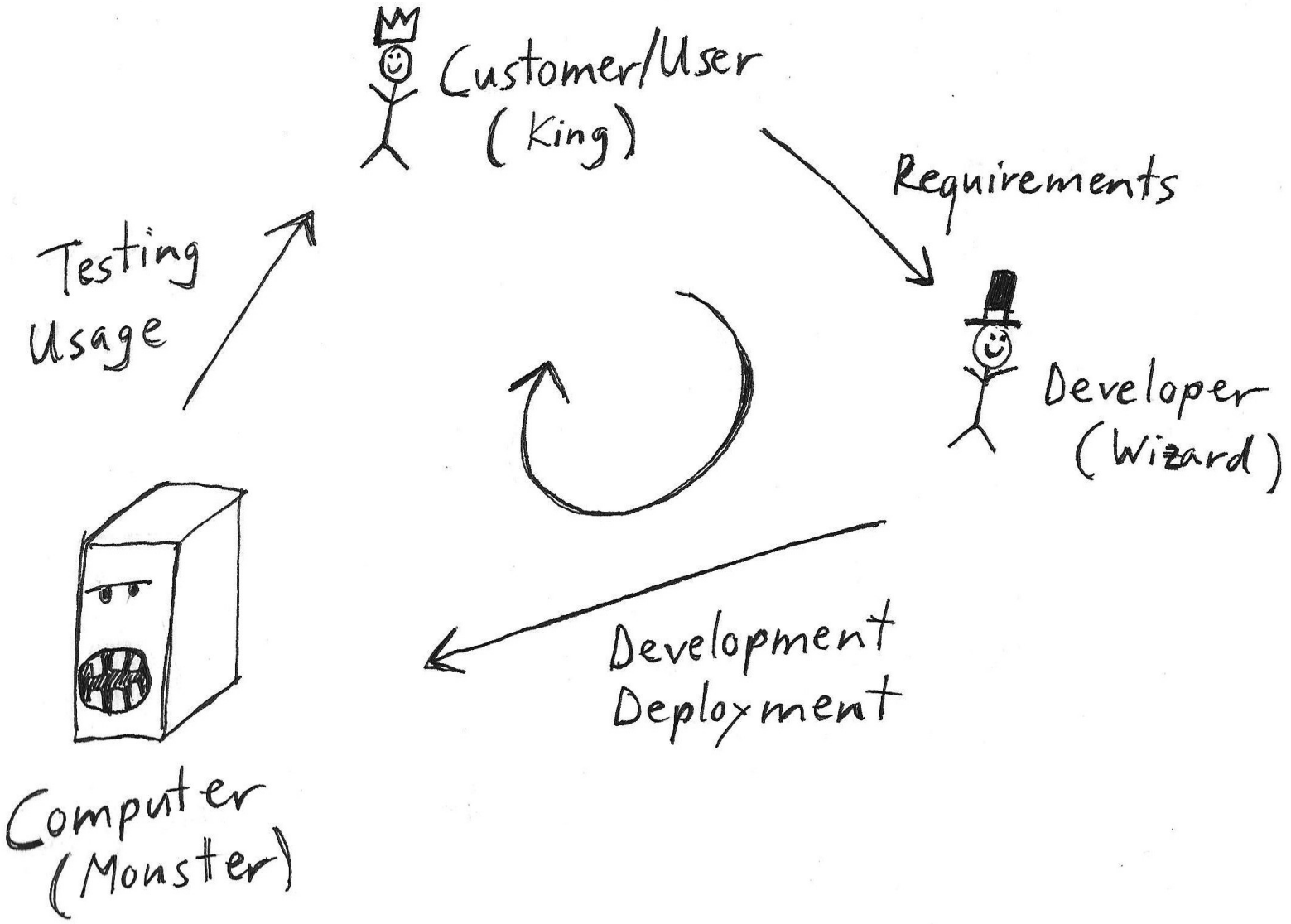
At ETH Zürich

About Michael Wechner

- Mathematical physics at ETH Zürich
- Computer simulations on dendritic growth at Max-Planck Institute
- Dev. of Open Source Content Management Solutions: Apache Lenya and Wyona Yanel
- Apache Member since 2004
- Dev. of Continuous Integration / Delivery and Deployment solution Yulup since 2014

Software Development Life Cycle



The Goals

- Bug free software, no regressions
- The Software does what it is supposed to do
- Performs and scales beyond infinity
- Happy customers / users
- Happy developers
- Happy department of finance

The Solution

- Changes as small as possible
- Deployment on production as quickly as possible

As quickly as possible

- 1 year?
- 6 months?
- 3 months?
- 2 weeks?
- 1 week?
- 1 day?
- 1 hour?

Continuous is not perfect ...

- ... but still better than all those other forms that have been tried from time to time.

Continuous Integration

- Running tests with every commit/push
- Running tests for every branch

Continuous Delivery

- Ensure that your code is always in a release-ready state
- Release your software at any point in time

Continuous Deployment

- Actual delivery of features and fixes to the customer as soon as they are ready.

Philosophy

- No more releases!
- Continuous (integration), continuous (delivery), continuous (deployment)!
- Continuous as software requirement!

Continuous Integration Software

- Jenkins/Hudson, jenkins-ci.org
- Travis-CI, travis-ci.org
- „Atlassian“, www.atlassian.com/software/bamboo
- Snap, snap-ci.com
- Yulup, www.yulup.com
- https://en.wikipedia.org/wiki/Comparison_of_continuous_integration_software

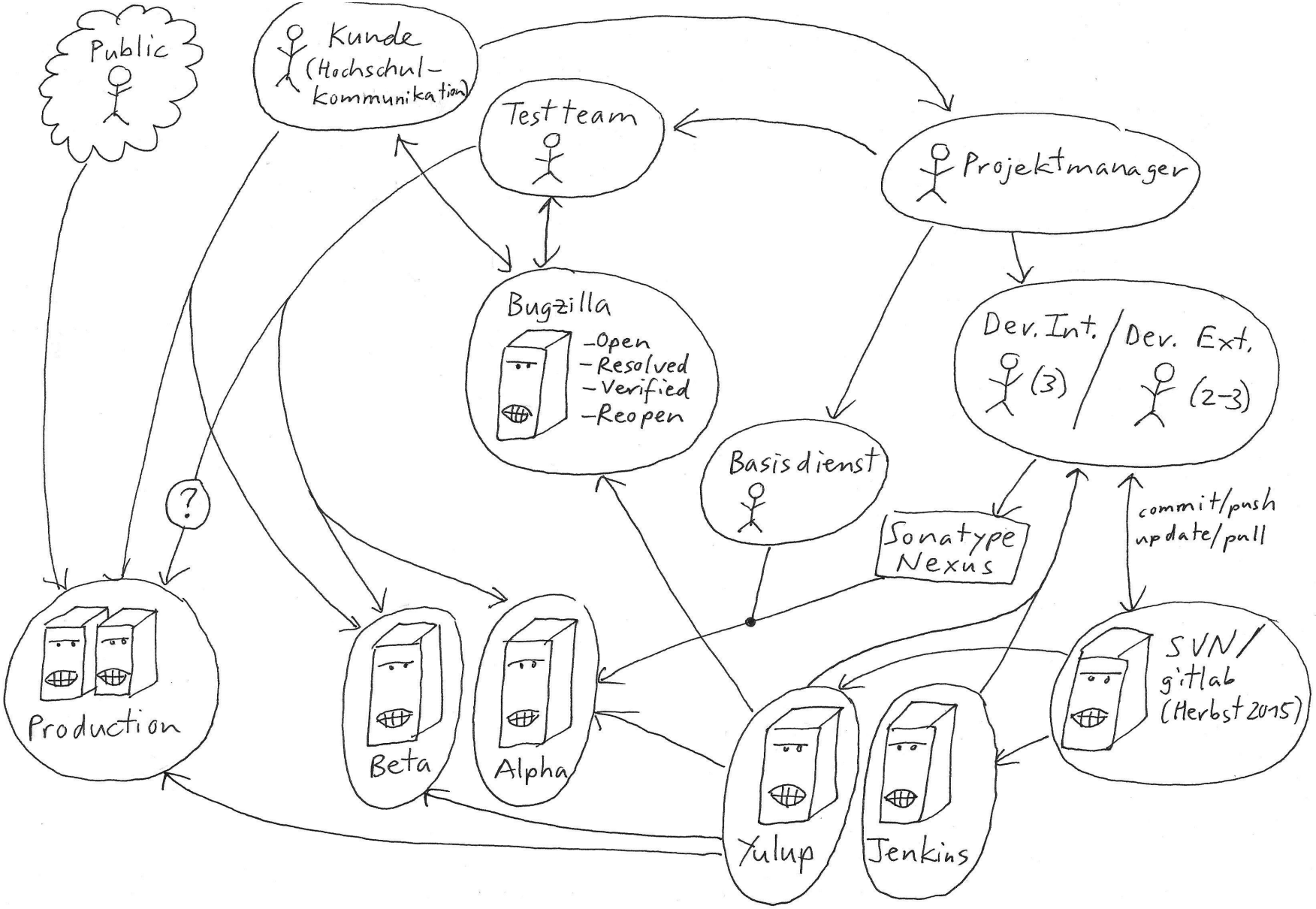
Differences between Yulup and other CIDD software

- Management/Coordination of manual tests
- Combination of manual and automatic tests
- Distinct association of changes with tests (scalability, native agile)
- Involvement of all parties, in particular non-technical

Yulup Demo

- Changing a HTML Page
- Changing a Java class which has no test yet
- Creating a source snapshot of Yanel

Software development cycle at ETH



Possible Improvements

- Switching to git (autumn 2015), because it makes for example working with branches easier, e.g. bug-fix and feature branches
- Automatic deployment on alpha, beta and production servers
- Structured manual testing, e.g. Using BDD scenarios
- Incremental / agile testing
- Shorten development cycle in general

ETH recent examples of enhancements and bug fixes

- Replace MS-Fast-Search-Engine by Google Custom Search
- Technical improvements of the search component
- Bug fixes of the form component
- Migration of LDAP connection

BDD Scenario of Search

- Given: I am on the search form (https://www.ethz.ch/de/utils/search.ethz_search.html)
- When: I enter a query, e.g. 'FAST search engine'
- Then: I receive 10 hits displayed, whereas each hit has a title, text excerpt and a link. If a hit is a PDF document, then there will be a hint above the hit title about the document format and its size.

Html Testing

- HtmlUnit, Selenium, Canoo, ...
- Searching an element by a unique CSS id is often easier than using XPath, because in case elements get nested differently

Conclusion

- Stability instead Instability
- Satisfaction instead Dissatisfaction
- Collaboration instead Accusation
- Measurability instead Uncertainty
- Transparency instead Secrecy